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**Transmittal Letter****TO**

Environmental Affairs Division  
Seattle City Light  
1015 Third Avenue  
Seattle WA 98104

**DATE** July 19, 1990**ATTENTION** Ms. Christy O'Quinn  
Project Manager**REFERENCE** C86-167**WE ARE SENDING YOU:**

☐ Drawings ☐ Prints ☐ Plans ☐ Specifications  
☐ Copy of Letter ☐ Change Order ☒ Other draft

Copies	Date	No.	Description
Two	7/19/90	#90-6	"1990 Spring Monitoring of the Georgetown Flume"

**THESE ARE TRANSMITTED as checked below:**

☐ For approval ☐ Returned for corrections  
☐ For your use Resubmit ☐ copies  
☐ As requested  
☒ For review & comment

**REMARKS**

NOTE: We have noted the request for some QA/QC procedures in the  
work order. We are still trying to get this out of NW Testing.

→ Will put in Final Report, for sure.

Copies to \_\_\_\_\_

Signed \_\_\_\_\_

**SCL 05215**

CTY0050228

SEA290705



## TELECOPY TRANSMITTAL

ENVIRONMENTAL AFFAIRS DIVISION

TO: Nike Healy  
NAME CITY AND STATE

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FROM: Emily (90-6) EAD/120 DATE: 8/15/93  
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*Nike,  
Sally,  
Looks good; Thanks very much for the 87-13 data, I'll let you  
know if additional sample collection is needed.  
Please call if I have any questions re: 90-6 report*

L-107-98 (10-88)

SCL 05216

CTY0050229

SEA290706

DRAFT REPORT

SEATTLE CITY LIGHT WORK ORDER #90-6

1990 SPRING MONITORING OF THE GEORGETOWN FLUME

*H-CL-Revisions, comments & questions to be answered.*

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July 19, 1990

SCL 05217

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SEATTLE CITY LIGHT WORK ORDER #90-6

1990 SPRING MONITORING OF THE GEORGETOWN FLUME

I. INTRODUCTION

In November 1985, PCB-contaminated sediments were removed from the Georgetown Flume System. PCB-contaminated soils in the catch basin area of the Steam Plant Yard were also excavated during the 1985 cleanup. In March 1987, the Boeing Company was given a 90-day notice of cancellation of its permit to dispose process cooling water into the flume. The permit was revoked by City Light on May 22, 1987. In April 1987, Raven Services Corporation undertook a project authorized by Seattle City Light Work Order #87-5, ~~to determine the extent of polychlorinated biphenyl oil contamination in the Georgetown Steam Plant drainage ditch and flume~~ <sup>new PCB-contamination</sup> to determine if any ~~contaminants~~ <sup>performed to comply</sup> had reentered the system. This study was in compliance with a Department of Ecology [WDOE] order. Results of the 1987 study indicated that some recontamination of the flume system had occurred. Documentation and chronology of the recontamination of the flume system was presented in the report for Work Order #87-10, page 16. The Boeing Company subsequently sealed the storm drain spouts and ~~cooling water~~ <sup>its cooling water</sup> plumbing that discharged into the flume. Additional flume monitoring occurred in July 1988, as authorized by Seattle City Light Work Order #88-12, to reassess the extent of PCB contamination. <sup>In 1989,</sup> Quarterly monitoring ~~in 1989~~ was authorized by Work Order #89-6, and consisted of spring, autumn and winter monitoring only. The quarterly monitoring program is scheduled to continue in the future until the flume is closed <sup>or</sup> filled in ~~or otherwise disposed of or deactivated~~.

<sup>Please Change order to (SCL) 90-6</sup> ② Between the mouth of the double pipes and the tide gates, the structure of the flume interior lining changes from concrete to wood. ① In 1989, an additional sampling project was initiated to determine the PCB concentrations inside the flume's wood planks <sup>lining</sup>. Wood cores from the planks in the flume north of Myrtle Street were collected and analyzed. <sup>when? Additional</sup> This sampling will continue during 1990. <sup>to be completed</sup> ~~An further sub-project was initiated for the present study that includes sampling of the ditch in the old catch basin area that was excavated in 1985.~~ The spring monitoring, as authorized by Work Order #90-6, took place on <sup>8 June</sup> May 8, 1990, <sup>during the late rainy season,</sup> and is reported here.

③ The current work order (90-6) also involves reassessment of PCB levels in the 1985 cleanup area. ~~This sampling~~ <sup>results</sup> Sampling locations ~~are~~ <sup>shown</sup> in figure 343.

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## II. <sup>E</sup>SAMPLING METHODOLOGY

### A. Sampling Strategy

In accordance with EPA SW-846, "Test Methods for Evaluating Solid Waste," a sampling strategy was chosen from sections most analogous to the nature of the site. These sections were 1.4.3 and 1.4.4. The sampling scheme for flume sediments consisted of a pattern of collection points established in ✓ 1987. The present sample locations were ~~chosen~~ consistent with that pattern. Wood cores were located to complete a pattern of wood samples that began at Myrtle Street and were collected upstream sequentially.

### B. Container and Sampling Equipment

All samples were placed in pre-cleaned, 270 ml wide-mouth glass containers. Screw cap lids were lined with aluminum foil. The precleaning procedure involved scrubbing with a special petrochemical dissolving soap [HarborMaster Products, Inc., Edmonds, Washington]. A final rinsing with methylene chloride was undertaken to remove any invisible greases and detergent residues.

✓ Scoops were laboratory grade stainless steel. Before use, all tools were buffed free of rust, cleaned with petrochemical dissolving soap, and rinsed with methylene chloride.

### C. Field Observations

Data on the collection process and observations of the physical nature of the samples were kept in the bound field log book. The format for this book is chronological.

### D. Sample Collection

Method 8080 in the EPA SW-846 manual describes the protocol for handling organochlorine pesticides and polychlorinated biphenyls. Compliance with these instructions necessitated using glass containers and specified conditions for refrigeration. All samples in our case were delivered to the laboratory in time to comply with the maximum seven days storage for extraction and thirty days for complete analysis.

*Flume*

The sediments were shallow, and since access to the sample sites was restricted by the wire heavy mesh across the top of the flume, a special device was used in the form of an 8 cm stainless steel spoon bent to a 90° angle and attached to a 1/2" diameter 7' long stainless steel pipe. The spoon was ferreted through holes in the mesh and used as a scoop against the floor of the flume. Compositing was accomplished in a stainless steel 30 cm diameter mixing bowl.

Wood cores were specified for this project. Raven has devised a corer that can sample any of the wood floor locations. The corer consists of a steel punch, 5/8" in diameter and nine feet long. Threads at the bottom of the punch allowed the corer to be screwed out from the planks after it had been hammered in. A slot was cut 2-1/2 inches above the bottom of the core nose to facilitate sample removal. The device resembles a giant leather punch. Sampling locations are shown in Figure II.

#### E. Analysis

Samples, stored no longer than five days at 4° C, were extracted with methylene chloride and taken up with pesticide grade hexane. Samples were pre-treated with Florisil filters to remove residues that interfere with the PCB determination [cleanup modification of USEPA Method 3540, as specified by 40CFR136]. The samples were analyzed by a modification of the packed column gas chromatography procedure described in Method 3550 using a capillary column. The automated gas chromatograph [Waters Corp Dimension-1] with electron capture detector was used. Concentrations below 0.01 ppm are below the detection limit, but concentrations below 1 ppm are difficult to quantify. ~~to~~ consistently?

*(if possible)*  
Please describe approximate depth of sediments <sup>samples from</sup> flume & depth of soil samples in cleanup area. Also, length of wood core samples (").  
(23")

### III. RESULTS

Temperatures, as recorded with the  $\pm 0.05$  C immersion thermometer were air - 19.4 °C, water in the flume head -19.5 °C, water at double pipes head, - 19.3 °C. State of the tide was zero ft. referenced to Seattle Tides. The flume had been emptying of tidewater since 4:00 A.M. The tide began to rise from -1.7 feet at 11:43 A.M.

*sample locations?*

The PCB results are listed by Aroclor in Table I and those in the flume are *shown* located in Figure 2. ~~The composite sample from the head end of the flume head (the barrier)~~ contained 33.9 ppm; *near the tunnel entrance* near the mouth of the flume head, 1.5 ppm was found. In the composite of four subsamples above the tidegates, 0.3 ppm was found. The other composites including the Slip #4 sample displayed no detectable PCB signals. The wood cores (whose detection limit reported in Table I is higher because the sample size was smaller) also displayed no detectable PCBs.

*? Soil collected area*  
Sediment samples gathered in the Steam Plant yard ditch for this monitoring period are also listed in Table I. The sample locations are plotted in Figure 3. Of the three composites collected, only the site of the old catch basin contained sediments with detectable PCBs (7.2ppm). *a* The physical description of all the samples in this study *is provided* are given in Table II.

*I don't understand this statement can you fill me in on what's at work here?*

#### Comments:

I would like to see a reference to how these results compare with water (89) monitoring. For example, refer to the second paragraph, "Results", pg. 3-4, 1989 final report. Any significant differences in conditions, results etc...? You don't, however, need to provide an explanation of why. Also, a fuller description of the nature & volume of flume sediments would be helpful in future reports. I note that in the 1989 report you list sample depths under sample description table. Please continue to provide <sup>(or is it sediment depths)</sup> this info. & perhaps reference that table under pt. D, Sample Collection discussion.

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*This looks fine in all other respects.*  
*Shirley Chisley*

SEATTLE CITY LIGHT WORK ORDER #90-6  
1990 SPRING MONITORING OF THE GEORGETOWN FLUME  
SAMPLE LISTINGS

TABLE I

<u>Sample #/ # Subsample</u>	<u>Location</u>	PCB Concentration (ppm) Aroclor 1254	PCB Concentration (ppm) Aroclor 1248	PCB Concentration (ppm) Total
GS-1 /2	Flume head	28	5.9	33.9
GS-2 <del>/1</del> 2	Flume head	1.0	0.5	1.5
GS-3 /2	Double pipe head	<0.1	<0.1	<0.1
GS-4 /4	Above tidegates	0.2	0.1	0.3
GS-5 /4	Below tidegates	<0.1	<0.1	<0.1
GS-10 /2	Willow St. Bridge	<0.1	<0.1	<0.1
GS-11 /1	Slip #4	<0.1	<0.1	<0.1
GS-6 /wood	Below tidegates	<0.3	<0.3	<0.3
GS-7 /wood	Above tidegates	<0.3	<0.3	<0.3
GS-8 /wood	Above tidegates	<0.3	<0.3	<0.3
GS-9 /wood	Willow St. (blank)	<0.5	<0.5	<0.5
GS-12 /3	Old catch basin	7.2	<0.1	7.2
→ GS-13 /3	And Central area of ① ditch ②	<0.1	<0.1	<0.1
→ GS-14 /3	East end of ② ditch ①	<0.1	<0.1	<0.1

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SEATTLE CITY LIGHT WORK ORDER #90-6

1990 SPRING MONITORING OF THE GEORGETOWN FLUME

SAMPLE DESCRIPTIONS

TABLE II

<u>Sample #/ # Subsample</u>	<u>Location</u>	<u>Description</u>
GS-1 /2	Flume head east end, four feet from barrier	2" deep sediments of yellow-brown sand above oily black anerobic mud. Water not clear about eight inches deep.
GS-2 /2	Flume head west end, two feet from drain	Brown mud above black sand supporting weed-like grass one-inch long
GS-3 /2	Double pipes head	Almost totally humus of decayed leaves. Black and grey sediment two inches deep and littered on top with fast food containers.
GS-4 /4	Above tide gates	Upstream: black humus and clay, brown clay and decayed leaves. Downstream: some construction sand swirled by tides into berms, zero to three inches thick.
GS-5 /4	Below tide gates	Upstream: gray and black humus leaves in fine clay/sand. Downstream: fine sandy berms to three inches thick running into brown mud.
GS-10 /2	Willow St. bridge	Upstream: fine blue and black silt and humus. Downstream: construction sand berms.
GS-11 /2	Slip 4	Subsamples were taken a few feet south of the outfall. They were one-eighth inch of gray mud over blue-black oily anerobic silt.
GS-6 /wood	Twenty feet below tide gates near north wall	Grey soft wood with grain intact
GS-7 /wood	Flume center one foot above tide gates	Firm wood, green and red-streaked

*numbers are easier to read, vs two inches*

*- can we approximate this distance more precisely? (perhaps mark next time you sample)*

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<u>Sample #/ # Subsample</u>	<u>Location</u>	<u>Description</u>
GS-8 /wood	Above tide gates 19.6 feet at upstream end of wood construction	Chunky decayed wood of straw color
GS-9 /wood	(blank) top of flume sidewall near bridge	Gray-colored weathered but with grain intact
GS-12 /3	Ditch, west end	Shallow rooted weeds growing on top of clean brown fill sand
GS-13 /3	Ditch, center area	Areas above stagnant water have curled mud. Areas below have decayed leaves over fill sand.
GS-14 /3	Ditch, east end	Yellow and green mold on top of dark brown sand and semi-decayed leaves.

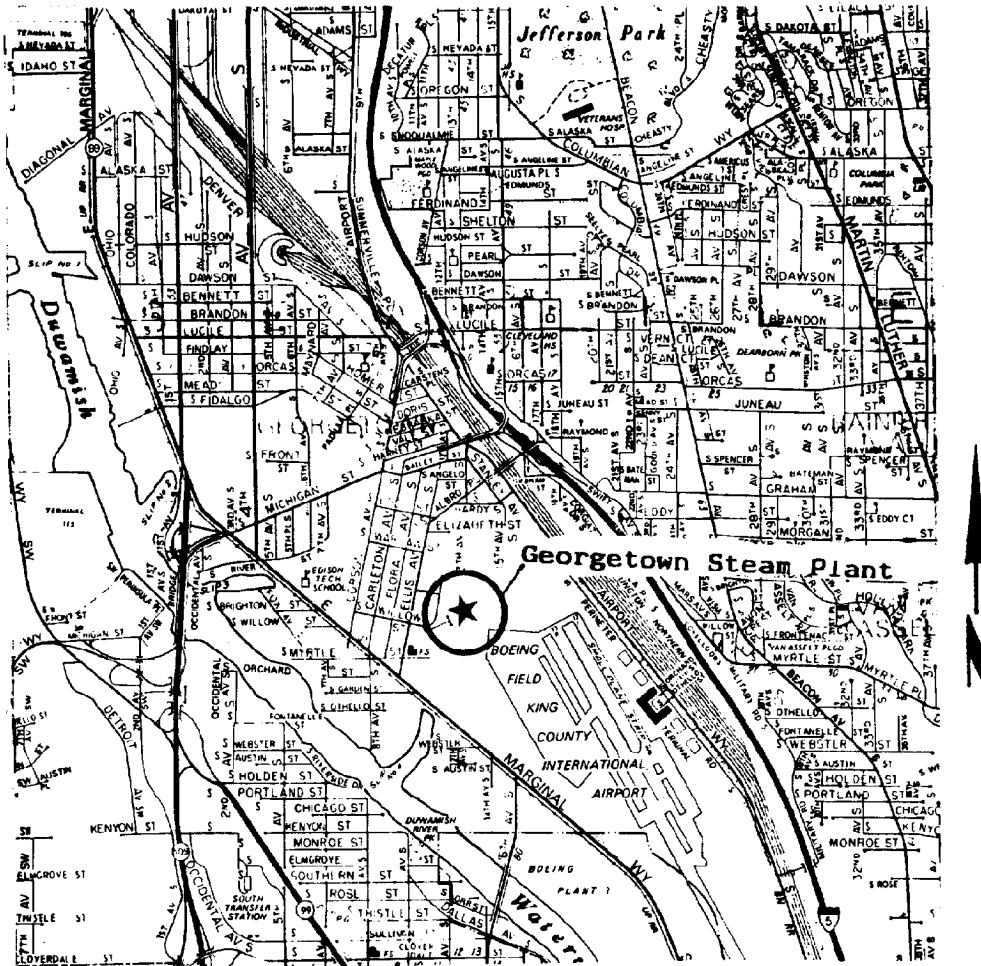
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# GEORGETOWN STEAM PLANT VICINITY MAP

Draft Figure 1



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<b>RAVEN SERVICES CORPORATION</b>		
SCALE: = 2560 ft	APPROVED BY: <i>mll</i>	DRAWN BY LSG
DATE: 6-27-90		REVISED
<b>SW GEORGETOWN DISTRICT</b>		
<b>SEATTLE CITY LIGHT</b>		DRAWING NUMBER <b>90-6-1</b>

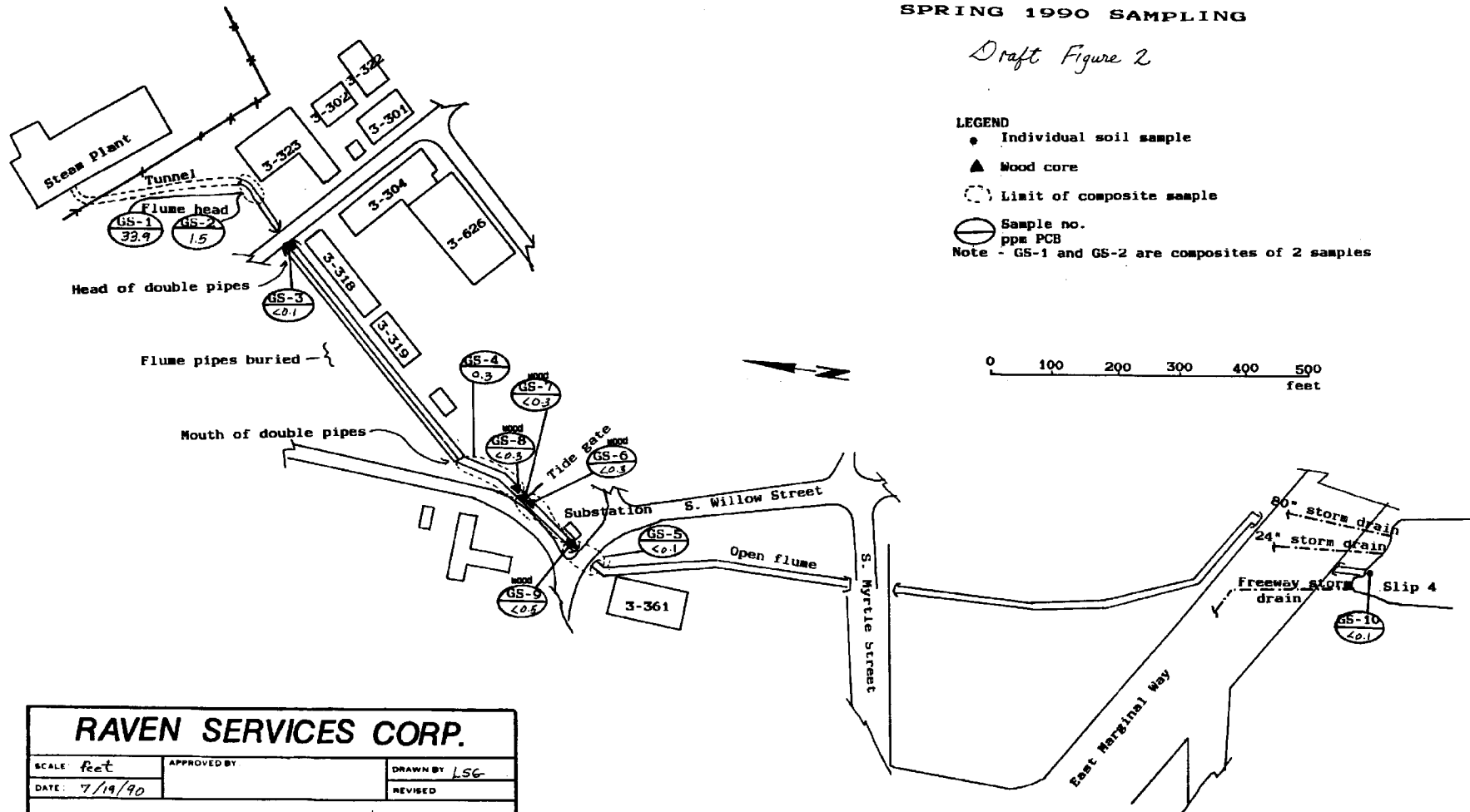
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SCL - GEORGETOWN FLUME SYSTEM  
 SPRING 1990 SAMPLING

Draft Figure 2



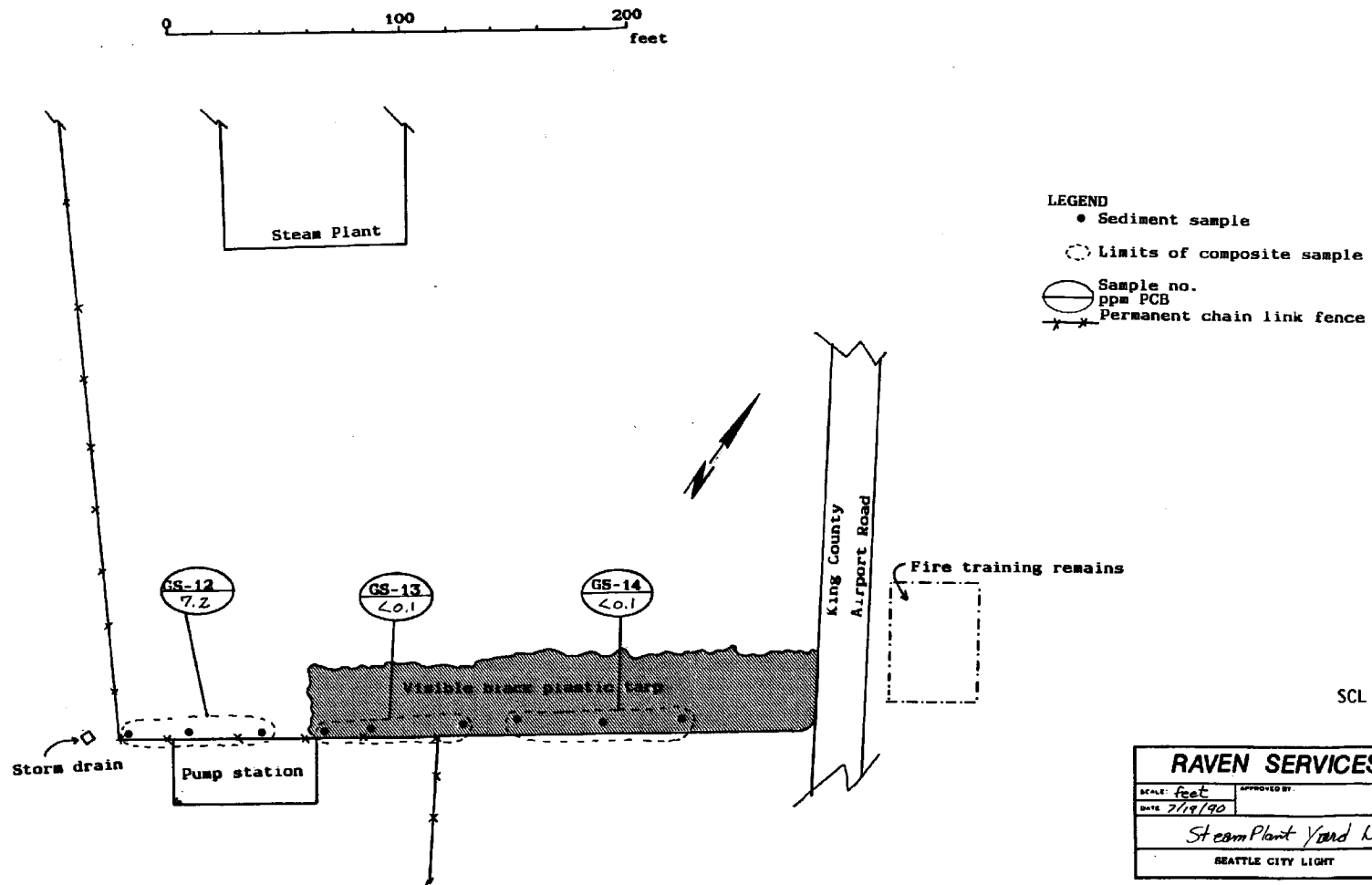
RAVEN SERVICES CORP.		
SCALE feet	APPROVED BY	DRAWN BY LSG
DATE: 7/14/90		REVISED
Steam Plant & Flume Locations		
SEATTLE CITY LIGHT		DRAWING NUMBER 90-6(1)-2

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Draft Figure 3



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RAVEN SERVICES CORP.		
SCALE: feet	APPROVED BY:	DRAWN BY: LSG
DATE: 7/18/90	REVISED:	
Steam Plant Yard Locations		
SEATTLE CITY LIGHT	DRAWING NUMBER:	90-611-3

CTY0050241